

Beyond Limits

Accelerating AI Digital Transformation

April 2025





Agenda

1. Company Overview
2. Beyond Limits AI Platform
3. AI Agentic Framework
4. Beyond AI Agentic Studio
5. Agentic AI for Dolphin Energy DT Project

1. Company Overview

The HYBRID AI Pioneer



18+ Years NASA/JPL Collaboration

AI Reasoning Labs (AIRL) established by JPL/Caltech in 2005, 140-person Challenge headed by Dr. Mark James

10 Years of Company Acceleration

AIRL technologies & core Challenge spun-out in 2014 to form Beyond Limits, founded by AJ Abdallat (CEO), Caltech and Dr. Mark James (CTO)

400+ Employees

Global DEI&B & CSR Initiatives with currently 29% Female & 49% Minority Employees

50%+ Graduate Degrees

Over 75% of technical staff earned PhD's and graduate degrees

8 Global Offices

Global offices located in California, Singapore, Hong Kong, Tokyo, Taiwan, Jordan, UAE, and Saudi Arabia

13 Awards

Beyond Limits won 2023 Frost & Sullivan Best Practices, 2023 Deloitte Technology Fast 500, Forbes' America's best Start Up Employer 2022 & 2021

Investors



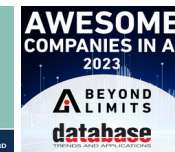
Caltech



Customers



Awards



2. Beyond Limits AI Platform

The Knowledge Gap



Machine Learning Limits

30% Failure Rate
due to insufficient data

ML suffers from data limitations and lack of explainability making it insufficient to deliver fully automated processes



Subject Matter Expertise

42% of Knowledge
unique to employees

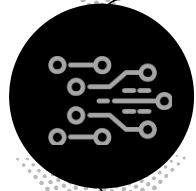
Subject matter expertise used to interpret data and make decisions is hard to capture & scale



Content Accessibility

175+ Data Silos
with limited access

The knowledge needed to meet ever evolving standards, policy and procedures is siloed and often inaccessible



The Delivery System

10% of Data
is actionable

The delivery system to deliver timely, contextually relevant information to the front line is broken

Hybrid AI

No-code/Low-code
AI System that
combines

**Generative and
Neuro-Symbolic
reasoning** to drive
intelligent
decisioning



Expert Reasoning - Rapidly capture, encode and leverage your expert's knowledge to deliver grounded, explainable guidance in near real time.



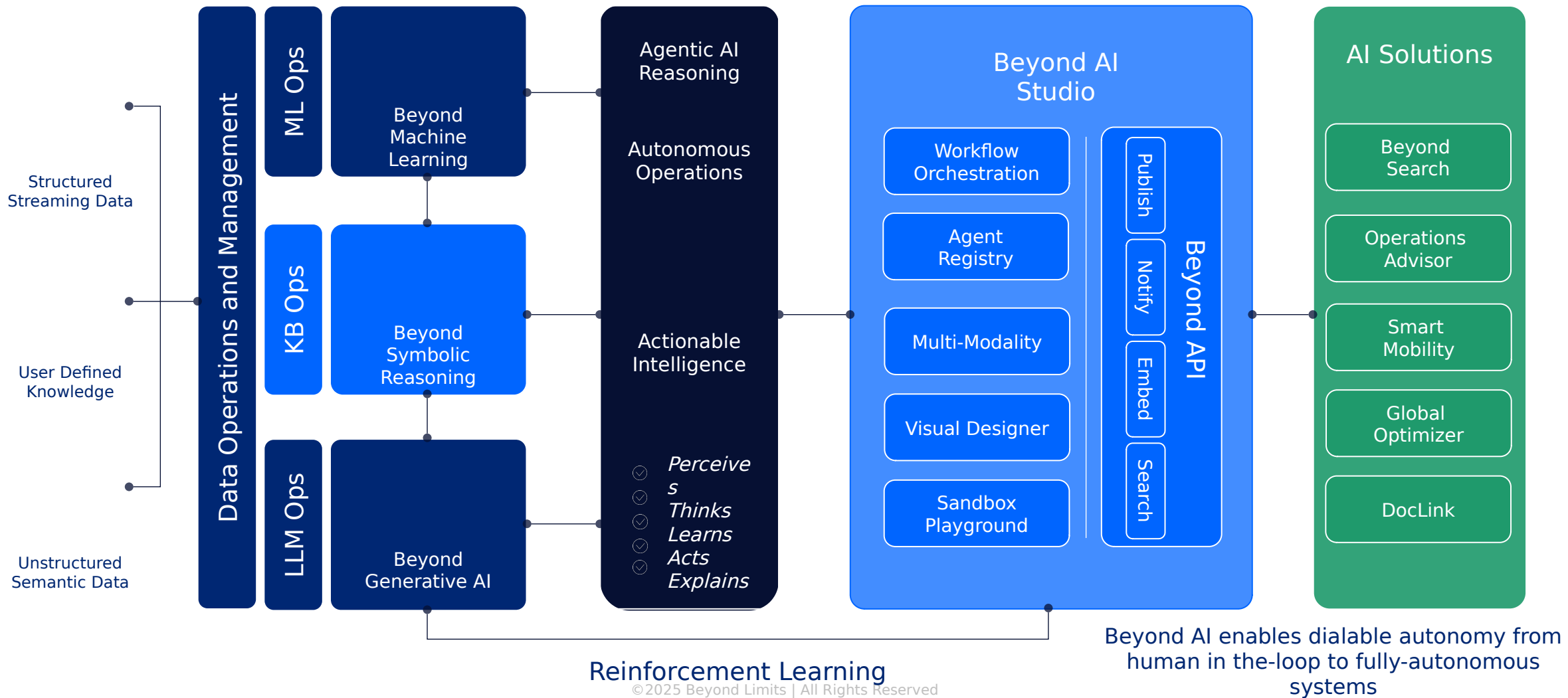
Generative AI - Create a unified enterprise knowledge store that generates accurate answers, recommendations and content on demand.



Hybrid Solutions - Extend the value and enhance the adoption of “Neural AI” investments by adding an intelligent decisioning layer that applies knowledge to supercharge returns

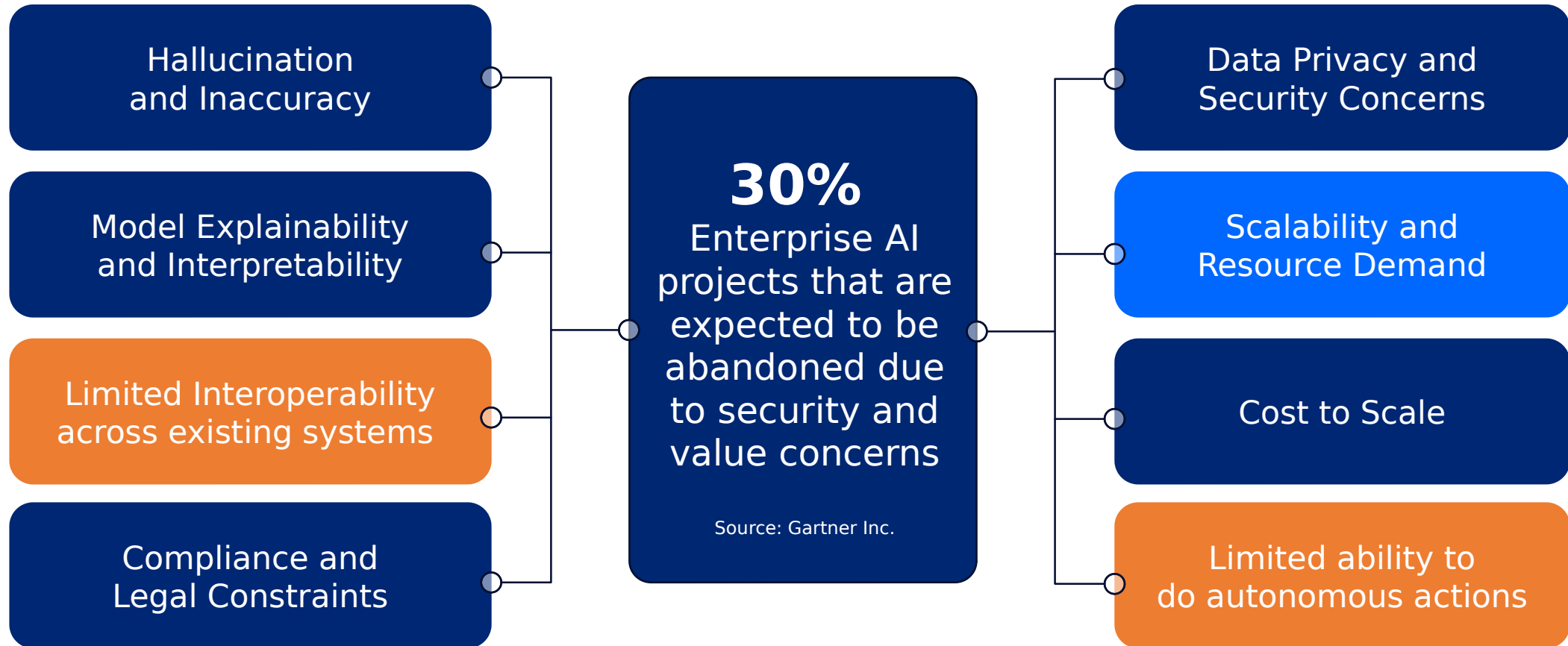
Beyond AI Platform

No Code Hybrid AI that autonomously perceives, plans, and executes actions to automate processes



3. AI Agentic Framework

Enterprise AI Challenges 2025



Enterprise-Wide Adoption of AI has hit the human ceiling

Beyond Limits transforms reactive AI into autonomous intelligence delivered at scale

Current AI : Human is the speed limit

Benefits

Enterprise User Productivity

- Enables 1:1 AI for Everyone
- Accelerates Upskilling
- Cost-effective Scaling
- Enhanced Domain Expertise
- Content Generation

Limits

Cannot Scale Enterprise Wide

- User Initiated limits use
- Person needs to perform final reasoning & tasks
- Limited Interaction with external systems
- Limited multi-step solutions
- Cannot execute closed loop automated actions

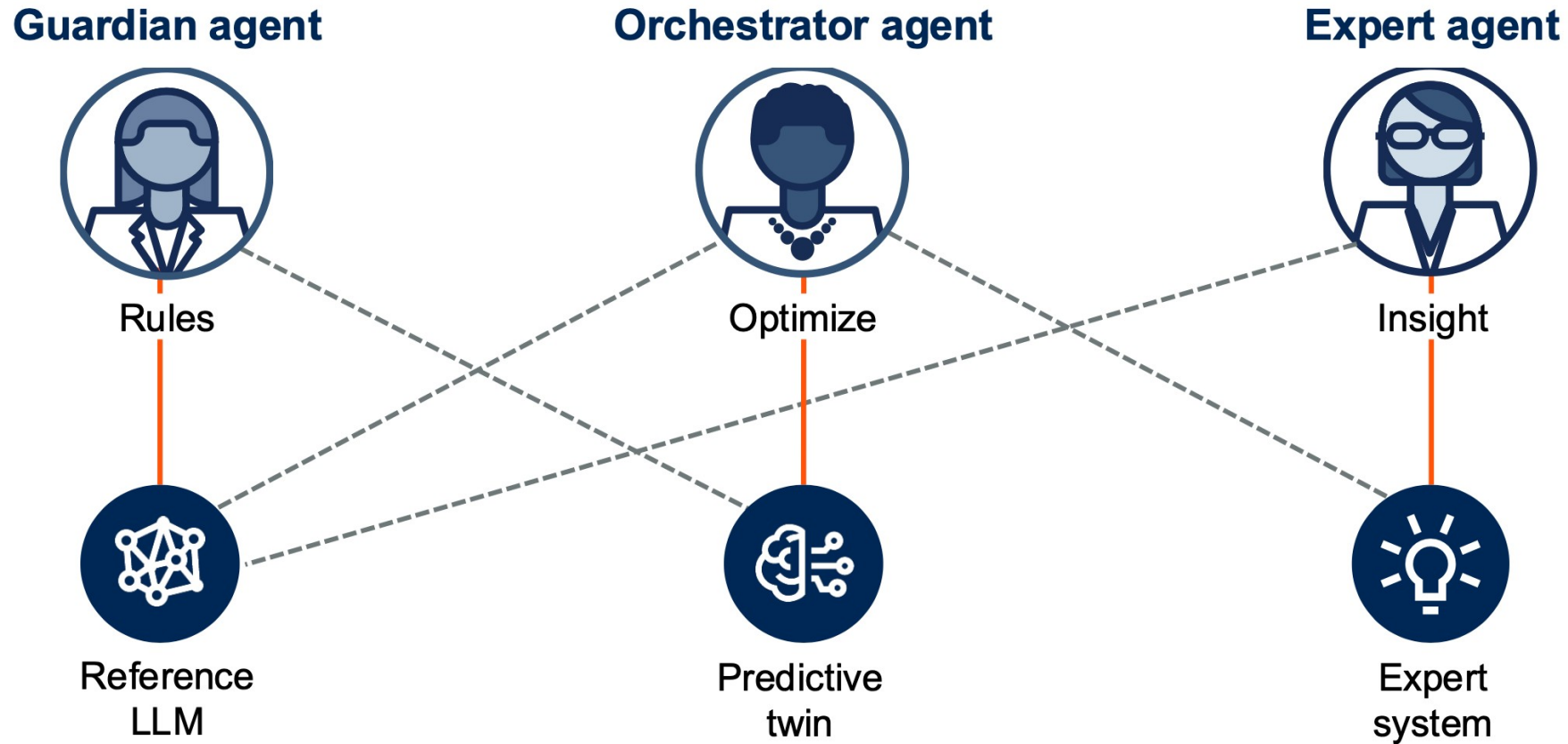
Beyond Limits Agentic AI

Goal Driven AI that Unlocks Enterprise-wide Autonomy

- Autonomously Reasons, Plans and Acts
- Shifts from Advising to Actionable Intelligence
- Truly Autonomous End-to-End Workflows
- Interoperates with existing systems
- Highly adaptable with dialable intelligence

Autonomous Intelligence at Scale

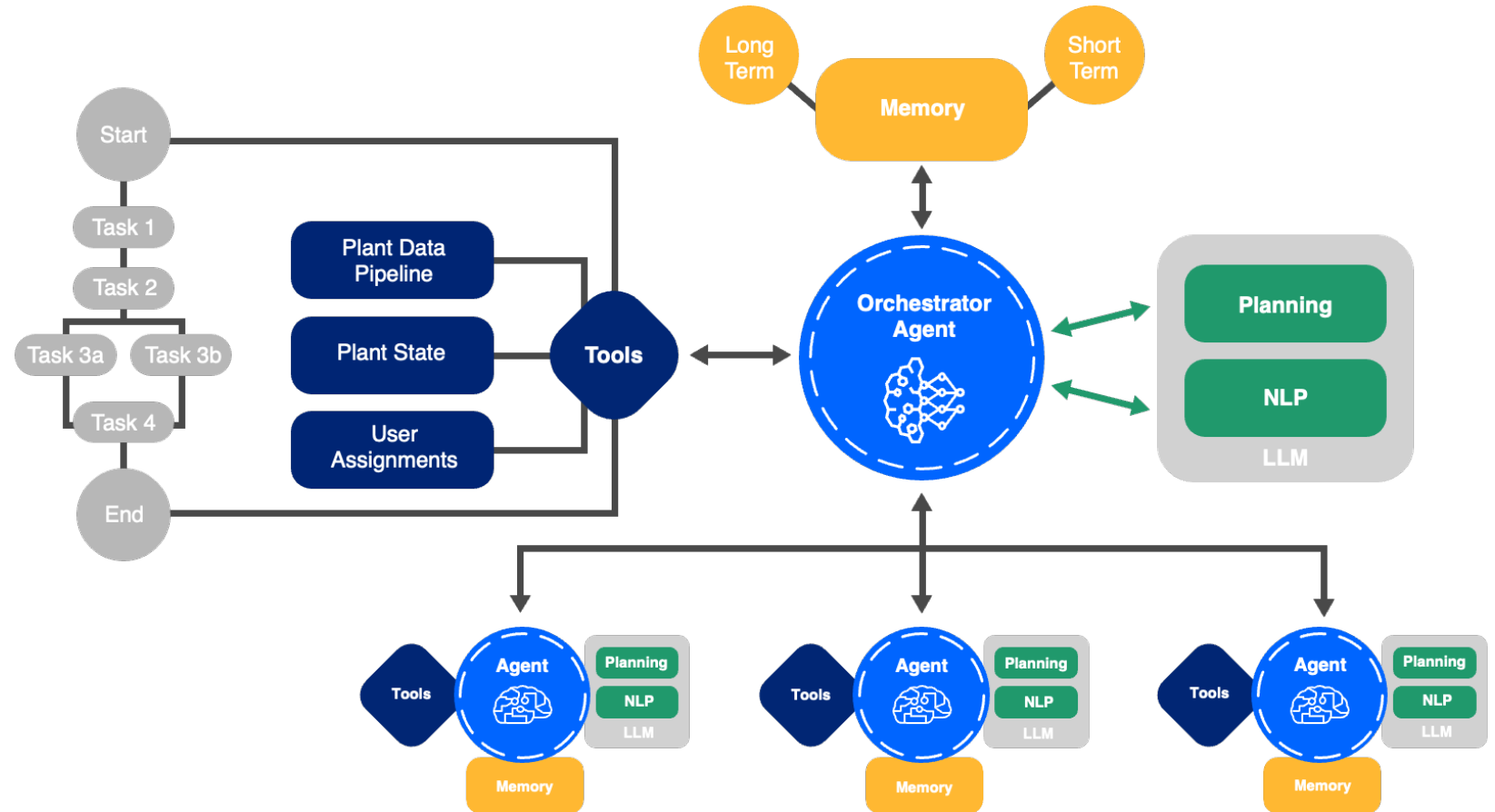
Create network of agents to deliver accurate grounded actions



The Challenge: Its not that simple

An Agentic AI system leverages **LLMs as reasoning engines** to interpret goals, generate plans, make decisions, and execute tasks across APIs and workflows.

- Large Language Models (LLMs)
- Agent Orchestration Frameworks
- Vector Databases & Knowledge Graphs
- API & Tool Integration
- Memory & Context Management
- Reinforcement Learning & Feedback Loops



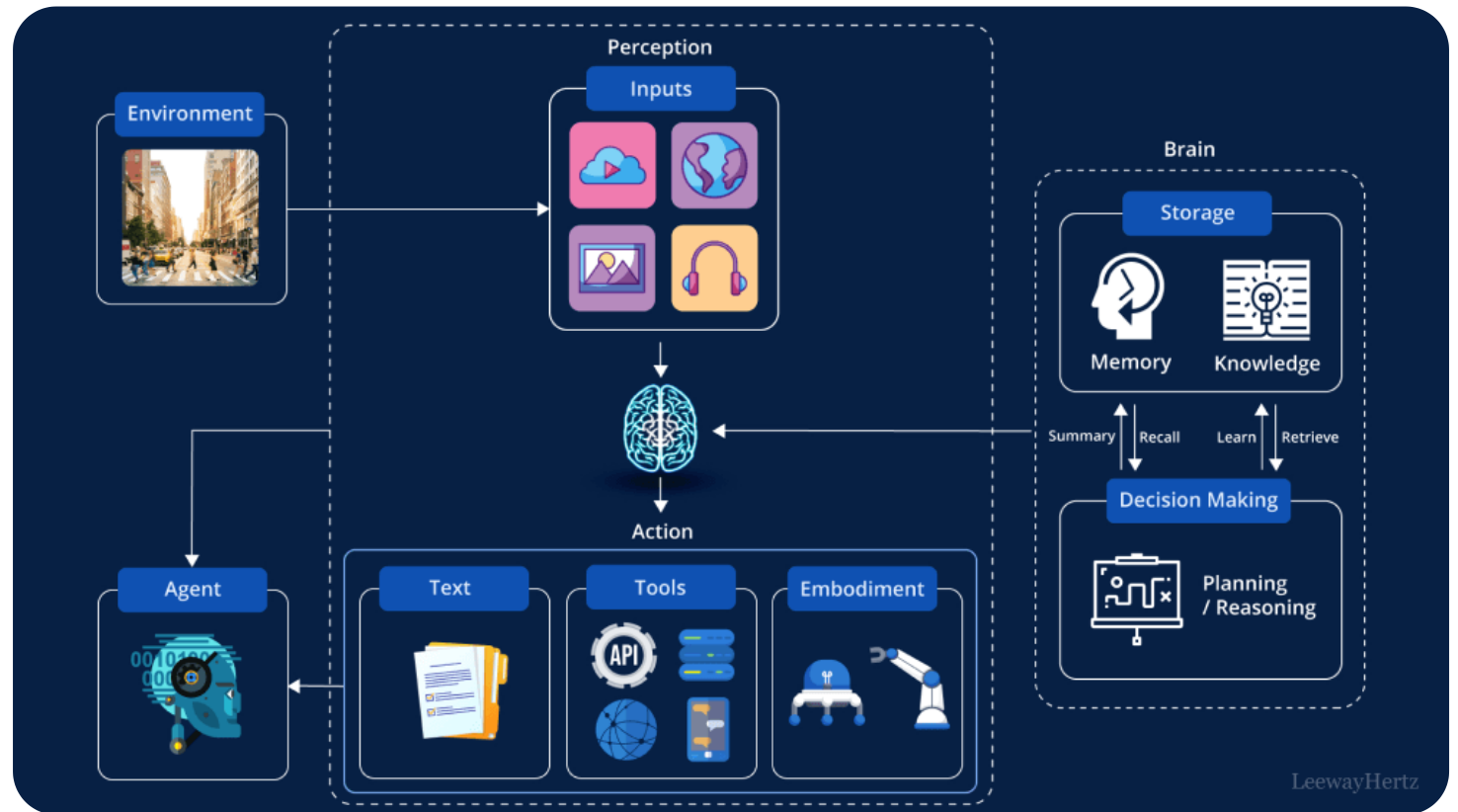
Agent Approach: Action Driven

An Agentic AI system leverages **LLMs as reasoning engines** to interpret goals, generate plans, make decisions, and execute tasks across APIs and workflows.

- **Not merely predictive:**

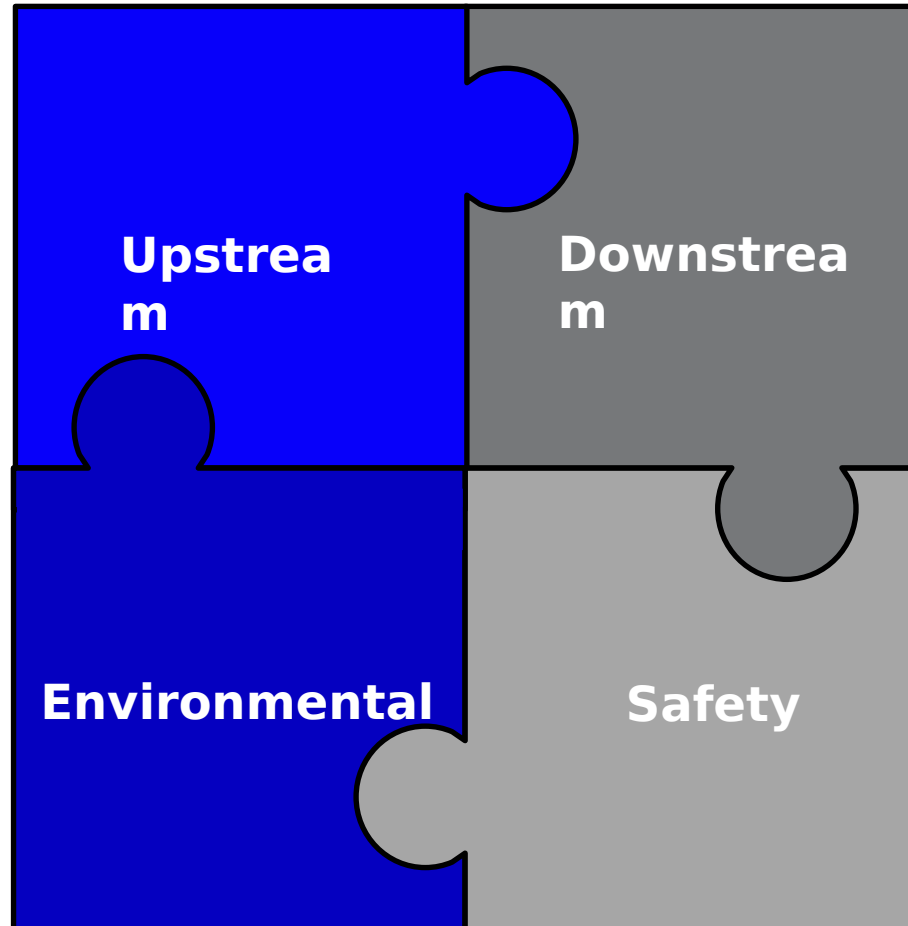
Agents don't just employ predictive intelligence; they provide a prescriptive and proactive elements to respond to predictions.

- **For example:** a predictive maintenance agent will predict a fault, notifies the corresponding engineers, ensure availability of spare/replacement, schedule maintenance among the different teams.



Agent Approach: Modular Design

An Agentic AI system leverages **LLMs as reasoning engines** to interpret goals, generate plans, make decisions, and execute tasks across APIs and workflows.



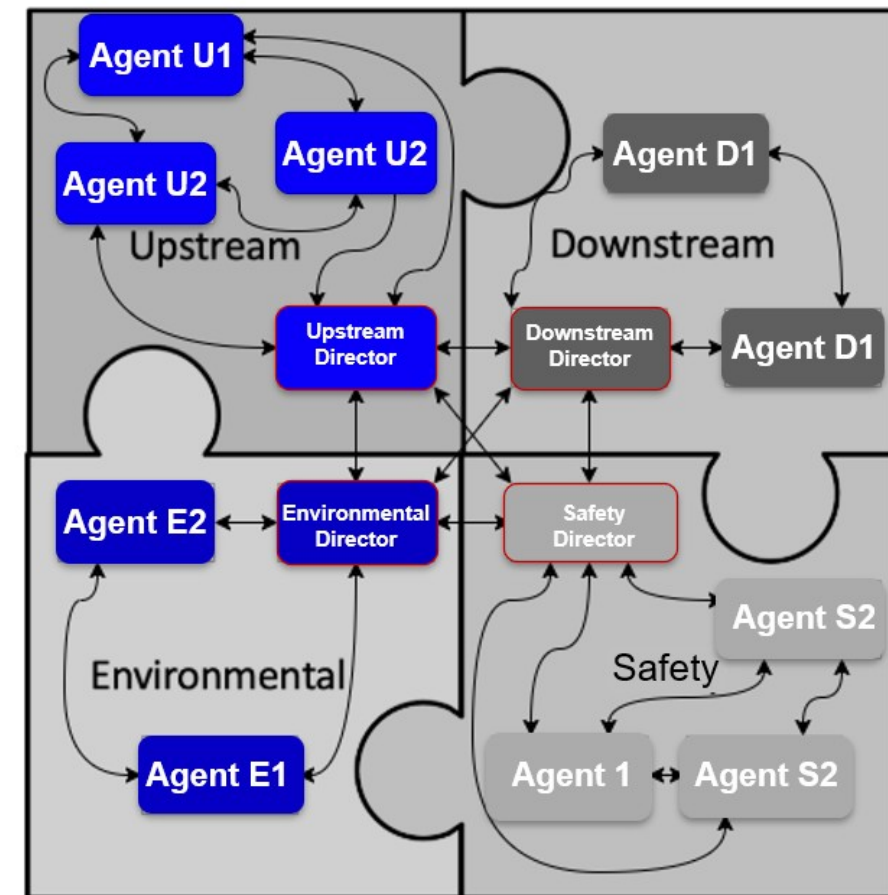
- **Form Use-cases to Modules:** the program focuses on a set of (possibly overlapping) modules, each of which groups a set of related use-cases.
- **Cooperative Agents:** an agent constitutes a solution for a use-case. Agents expose a cooperative protocol to allow integration between different modules to achieve higher levels of autonomy.
- **Example modules for O&G:** Upstream, Downstream, Safety, and Environmental.

Agent Approach: Path for Autonomy

An Agentic AI system leverages **LLMs as reasoning engines** to interpret goals, generate plans, make decisions, and execute tasks

across APIs and workflows. Agentic AI perceives inputs and responds with an action

- **Modular and Scalable Design:** Modular architecture with "director" agent enables scalable deployment and management of specialized agent functions.
- **Autonomous Task Execution:** LLM agents autonomously plan and execute complex tasks, moving beyond simple prediction to intelligent action.
- **Dynamic Workflow Planning:** LLMs analyze requests, dynamically plan multi-step workflows, and orchestrate diverse tools to achieve goals.
- **Natural Language Understanding:** LLM agents understand natural language instructions, enabling intuitive interaction and flexible tasking.
- **Tool Orchestration:** LLMs intelligently select and utilize specialized tools and systems, automating complex processes and data integration.
- **Collaborative Agent Networks:** LLM agents form collaborative networks, communicating in natural language to solve problems that require diverse expertise.
- **Adaptive Problem Solving:** LLM agents adapt to changing conditions and unexpected situations, enabling resilient autonomous operations.





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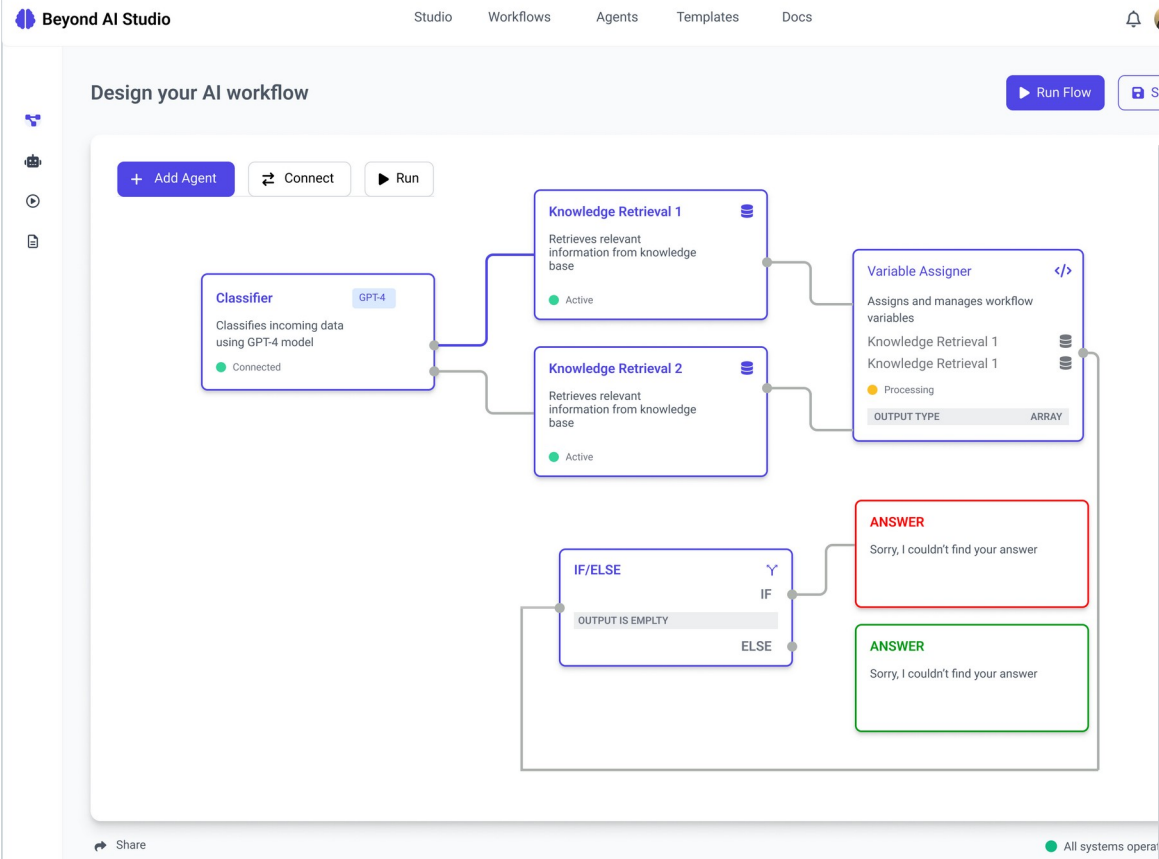
4. Beyond AI Agentic AI Studio

A no-code agentic AI studio for collaborative workflow design and process automation supported by a unified agentic AI marketplace

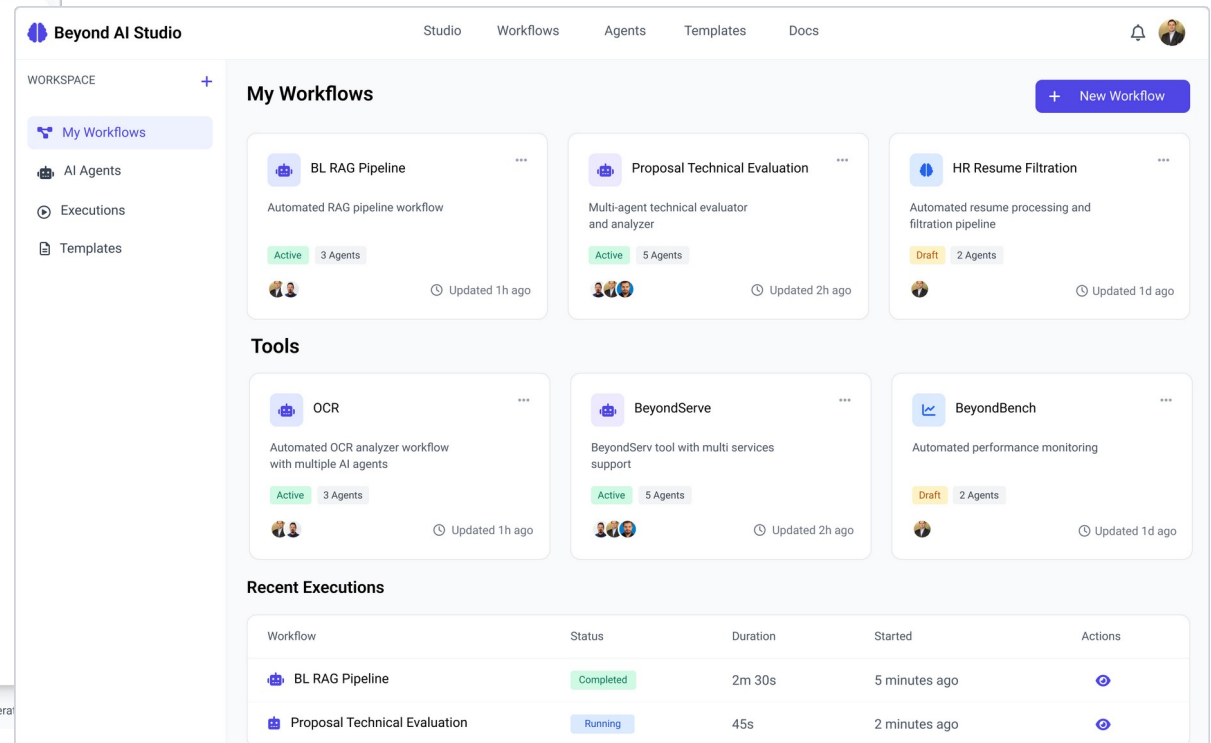


Agentic AI Studio- The new frontier Workflow Builder

Powering next generation end to end process automation with closed loop action system



Agent Registry



• Agent Workflow Builder



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5. Agentic AI for Dolphin Energy DT Project

Dolphin Energy DT Journey *

RESEARCH, DEVELOPMENT, AND INNOVATION

As a future-forward business, we invest in the research and development of our production processes. This investment is not only about ensuring reliable and efficient operations today – it enables us to innovate long into the future.

FUTURE FORWARD

Under our digitalization program, **Future Forward**, a number of projects were implemented during 2023. These included:



► **Production Data Management:** We have replaced 30 excel sheets by integrating data into one system, and allowing users access to production data from a single source.



► **Integrated Operations Planning:** This project has allowed a number of departments to combine plans and streamline resources, scheduling, and task planning.



► **Maintenance Scheduling and Planning:** This was fully implemented upstream, to manage around 40,000 work orders per year. Significant manual time using excel sheets and paper based processes has been replaced with a digital solution utilizing mobile tablets.



► **e-Invoicing and Procurement:** Our migration to SAP Ariba has enabled 100% digitalization of our procurement and invoicing.



► **Steam Trap Monitoring:** We began the procurement process to obtain a digital solution and sensors to be deployed at Ras Laffan plant to monitor stream traps, which will save significant quantities of water and energy.



► **Smart Plant Study:** A three-year roadmap is being developed looking at how AI, machine learning, robotic process automation, and digital operational technologies could be harnessed. In 2023, workshops were held with 100 business users to understand the challenges currently faced and provide awareness of these technologies and their added value. The plan is to implement four key projects: Plant Data Model, Asset Performance Management, Operations Management, and Situational Intelligence.



► **Business Process Automation and Digital Dashboard Development:** A further 24 processes were automated, bringing the total to 78 since **Future Forward** began in 2018. That equates to 1,069 days of manpower saved. A further 10 processes will be automated this year. More than 160 digital dashboards have been deployed enabling business units to get quick and easy access to their data, integrating a variety of data sources for accuracy and reliability.



THE CORE PROJECT

Comprising three programs – Cost Efficiency, Cost Avoidance, and Process Improvement – The CORE Project seeks to achieve cultural change, optimize productivity, enable resourcefulness, and maximize efficient expenditure.

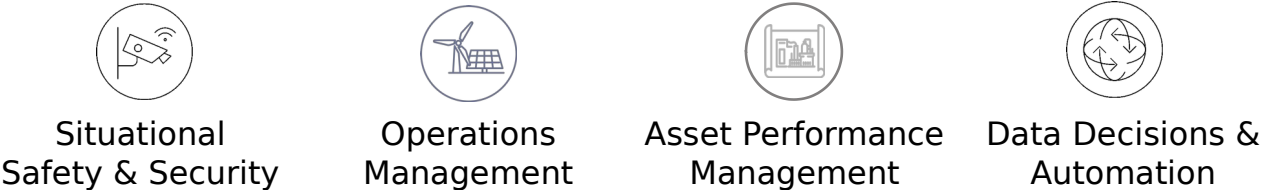
At the end of 2023, the project had delivered USD 33.8 million in actual cost savings - an estimated USD 331 million saved since the program began in 2016. The Cost Avoidance program alone has resulted in USD 141 million savings since 2022.

In the last year, four further processes were endorsed for implementation under the Process Improvement program: material management, business plan preparation and monitoring, asset integrity deviation/anomaly management, and general specifications

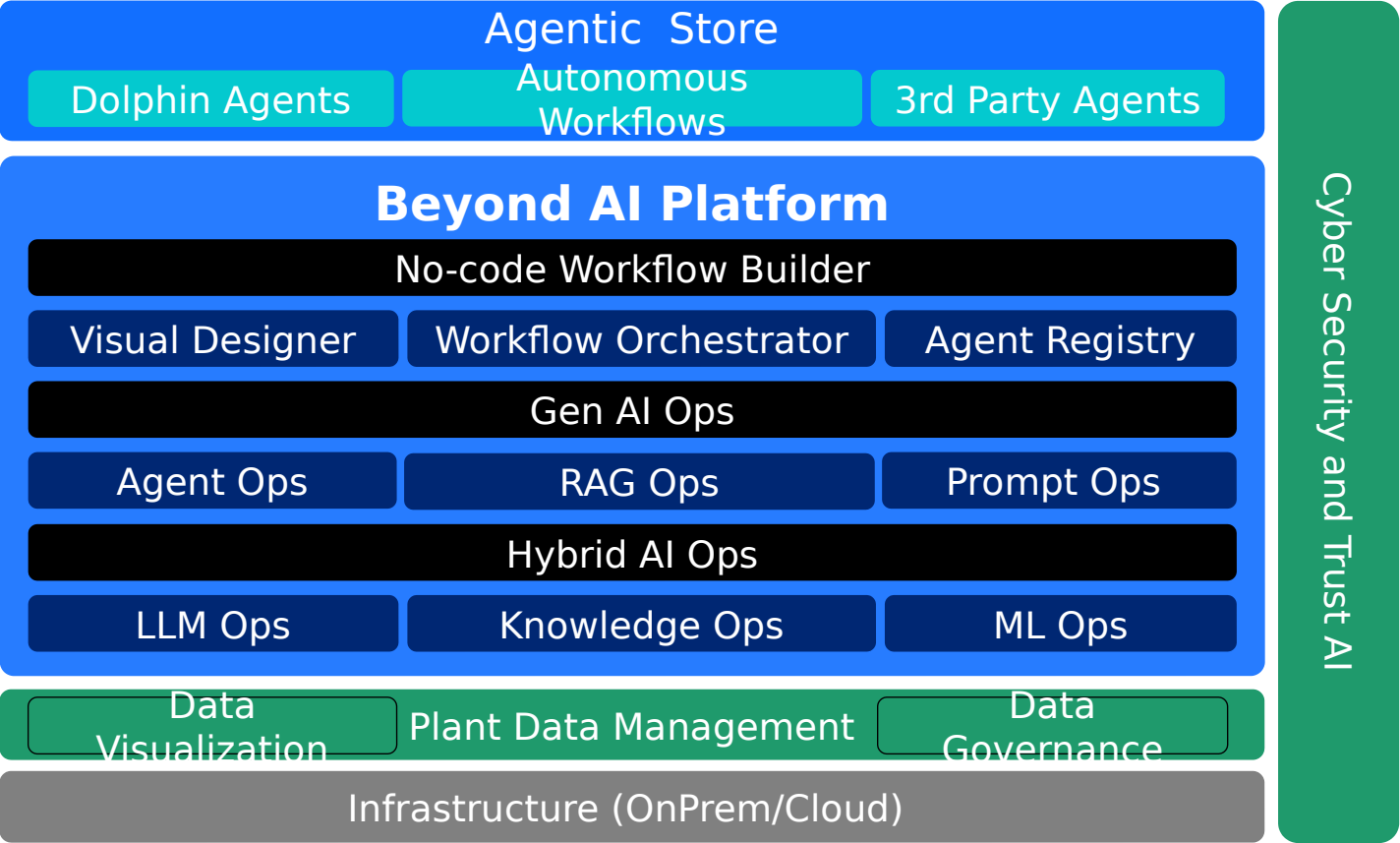
value. The plan is to implement four key projects: Plant Data Model, Asset Performance Management, Operations Management, and Situational Intelligence.

Beyond Agentic AI: Proposed Full Stack Solution

Complete AI platform to drive autonomous actions and operations



- Dolphin Use Cases
- Beyond Agentic Platform
- Beyond AI Components
- Dolphin Plant Data Management
- Dolphin Data Infrastructure



Beyond Agentic AI: Proposed Phased Approach

Complete AI platform to drive autonomous actions and operations

1. PHASE 1: Plant Data Management:

Asset Information (Engineering/Operational)
Management of Change
Visualization Capabilities

Agentic Framework

AI Agents Blueprinting

AI Lighthouse Use-case: Operations Advisor

AI Lighthouse Use-case: Dolphin Energy LLM

2. PHASE 2: AI Agents for Operations

Management:

Shift/Ops Reports

E-Permits

Connected Worker

Incident Reporting...

3. PHASE 3: AI Agents for Situational

Intelligence:

Safety & Compliance Monitoring

Geofencing

Live Monitoring...

4. PHASE 4: AI Agents for Performance

Management:

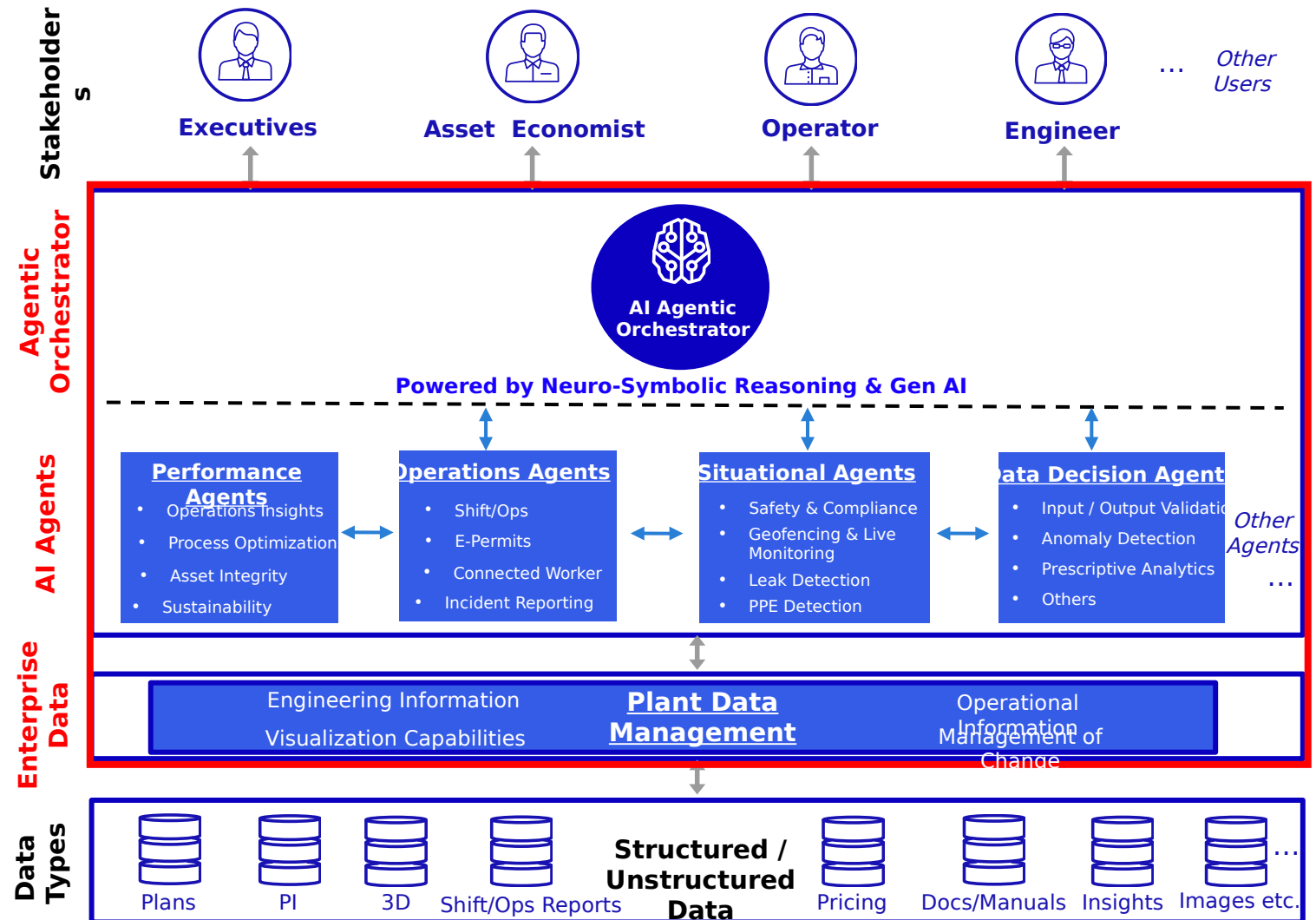
Operational Insights

Process Optimization

Asset Integrity

Predictive Analytics

Leak Detection



Thank You

The background is a dark blue field filled with intricate, glowing patterns of light. These patterns resemble digital waves or particle flows, with concentric circles and elongated streaks of light blue and white dots. Interspersed among these are several bright, out-of-focus orange and yellow light spots, creating a sense of depth and dynamic energy. The overall effect is a high-tech, futuristic aesthetic.